CLAIMS

1. Process for fabricating a structure comprising a carrier substrate (20) and a layer of semiconductor material (12) on one surface of the carrier substrate, the process comprising the following successive steps:

a) forming a layer of semiconductor material (12) on one surface of a first substrate (10),

b) implanting ions in the first substrate, under said surface, in the vicinity of the layer of semiconductor material, to form a zone (16), called a cleavage zone, which delimits a superficial layer (18) in the first substrate (10), in contact with the layer of semiconductor material (12),

c) transfer of the first substrate (10), with the layer of semiconductor material (12), onto the carrier substrate (20), the layer of semiconductor material (12) being made integral with the carrier substrate (20),

d) providing energy to cause cleavage of the first substrate along the cleavage zone (16), the superficial layer (18) of the first substrate remaining integral with the layer of semiconductor material (12) and with the carrier substrate (20) during this cleavage,

e) removing said superficial layer (18) to uncover the layer of semiconductor material (12).

2. Process according to claim 1, in which, during step d) the supply of energy is made in a form chosen from among a supply of thermal energy, a supply of mechanical energy, or a supply of a combination of these energies.

3. Process according to claim 1, in which step e) is implemented according to a removal mode chosen from among wet or dry chemical etching, polishing, oxidation followed by etching, or a combination of these modes.

4. Process according to claim 1, in which the first substrate (~~10~~) is a silicon substrate and the layer of semiconductor material (~~12~~) is a layer of silicon carbide.

5. Process according to claim 4, in which the layer of semiconductor material (~~12~~) in silicon carbide is obtained by causing the silicon of the first substrate (~~10~~) to react with a hydrocarbon.

6. Process according to claim 1, in which an insulator layer (~~14~~) is formed on the layer of semiconductor material (~~12~~) before ion implantation step b).

7. Process according to claim 1, in which a carrier substrate (~~20~~) is used which has a superficial insulator layer (~~24~~) and in which, during step c), the first substrate (~~10~~) is transferred with the layer of semiconductor material (~~12~~) onto the insulator layer (~~24~~) of the carrier substrate.

8. Process according to claim 2 ~~or 3~~, in which the insulator is an oxide.

9. Process according to claim 1, in which, after step e), on the layer of semiconductor material (~~12~~),

epitaxial growth of the same material is made in order to increase the thickness of the layer of semiconductor material (12).

10. Process according to claim 4, in which, after step e), on silicon carbide layer (12), a layer (30) of GaN is formed.

11. Process according to claim 1, in which the layer of semiconductor material (12) is made integral with the carrier substrate (20) by heat treatment.

12. Process according to claim 11 in which said heat treatment, to render the layer of semiconductor material integral with the carrier substrate, is extended to additionally cause the cleavage of step d).